

## REMARKS

The Office Action rejected claims 1, 2, 4, 7, 8, and 10, asserting that the claims are unpatentable under 35 U.S.C 103(a) in light of U.S. Patent 4,816,078 to Schiweck in combination with all of the following viewed collectively: U.S. Patent 4,831,127 to Weibel (Weibel-1), U.S. 5,008,254 to Weibel (Weibel-2), Saha et. *Applied Microbiology and Biotechnology*, (1996) Vol. 45, pages 301-396 (Saha et al.), and Gatzi et al. *Helv. Chim. Acta.* (1938), 21, 195-205 (Gatzi).

As described in the sections “Problems to be Solved by the Invention” and “Means for Solving the Problems” of the present specification, the present invention aims to obtain L-arabinose specially in high purity, good efficiency and high yield from vegetable fiber containing L-arabinose as a part of the constituting saccharides. As set forth in amended claim 1, this is accomplished with an acid hydrolysis without previously contacting the vegetable fiber with an alkaline medium. The prior art consistently teaches the previous use of the alkaline treatment, but applicant has found that this is advantageously omitted. The commonly used previous extraction of hemicellulose such as arabinan and arabinoxylan with an alkali such as  $\text{Ca}(\text{OH})_2$  is eliminated, as demonstrated in the specification at pages 5 and 6.

Schiweck discloses extractions of hemicellulose with an alkali. See Examples 1-3 of Schiweck. Schiweck, et al.’s description of the invention starts at column 1, line 54, referring to the extraction of the araban in an alkaline medium. The Examiner may be mistaking that part of Schiweck as being part of the description of EP A-No. 0115 068, since there is no new paragraph started on Schiweck’s line 54, as good grammar would suggest should have been done. However, the examples confirm the pretreatment with  $\text{Ca}(\text{OH})_2$  is essential to Schiweck’s

process. When vegetable fiber is treated with an alkali, as in Schiweck, hemicellulose is extracted. The hemicellulose consists of various monosaccharides including L-arabinose. Thus, when the hemicellulose is treated with acid, many different monosaccharides including L-arabinose are liberated which, leads to low purity of arabinose.

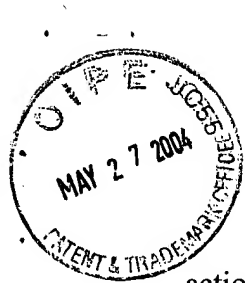
In contrast, in the process according to the present invention, vegetable fiber is directly treated with acid so as to selectively liberate L-arabinose, which is present at the non-reducing terminals of the vegetable fiber, leading to increased purity of L-arabinose. (See the paragraph bridging from page 5 to page 6 of the present specification)

For example, in Example 1 of the present specification, 93% purity of L-arabinose (occupying rate of L-arabinose) is achieved. (See the top row of Table 1, page 17 of the present specification) Such high purity of L-arabinose is very advantageous, especially when manufacturing L-arabinose commercially. It is not clear from Schiweck's examples how pure the L-arabinose was after acid hydrolysis with  $H_2SO_4$ . However, in the "Background Art" section of the present specification, the purity of the L-arabinose in the yield according to the method disclosed in Japanese Patent Laid-Open No. 312997/1997, (the L-arabinose content in the monosaccharide) is calculated as low as 18.9%. Therefore, such a method is not practical commercially. (See the paragraph bridging from page 3 to 4 of the present specification) While the final purity of L-arabinose in Schiweck is 95% in Example 1, the yield is modest, making Schiweck's process unsuitable for commercial manufacture.

Thus, claim 1 distinguishes over Schiweck, and the other references do not fill in the gap. The dependent claims 2, 4 and 7 should be allowable, too. Similar amendments have been made to claims 8 and 10, so they, too, should be allowable.

Another mode of distinction over Schiweck is presented in new claim 11.

The examiner's courtesy in the telephone interview held on May 11, 2004 is appreciated. In the interview, the examiner's thesis became clear that Schiweck, discloses the process steps of the claims as applied to beet pulp. The examiner pointed out that at the very beginning of the Schiweck et al specification, however, the patent discloses the process for production of L-arabinose from araban-containing plant material, so the examiner's position is that beet pulp is just an example. The examiner says that references such as the Saha disclose that various products contain L-arabinose, and so therefore it would have been obvious to use the process of Schiweck, et al. for the various other plant materials, such as corn fiber as disclosed in Saha, et al. Counsel doubts whether Schiweck is enabling for treating other plant materials, particularly in view of the adherence to only beet pulp treatment evidenced in the Weibel patents. Accordingly, new claim 11 has been presented omitting beet pulp as a vegetable fiber starting material from the markush group. Thus, the claimed subject matter is novel. The inference that Schiweck's use of beet pulp as but an example of a broader range of efficacy of his method is conjectural at best. Obvious to try is not the standard. *In re Goodwin*, 198 USPQ 1 (CCPA 1978); *In re Dow Chemical Co.* 5 USPQ 2d 1529 (Fed.Cir., 1988). Thus, claim 11 is allowable as well.



This amendment has placed the case in condition for immediate allowance, and such action is respectfully requested. However, if any issue remains unresolved, Applicant's attorney would welcome the opportunity for a telephone interview to expedite allowance and issue.

Respectfully submitted,

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